

## Dextrans Topic Tree

### Definition:

A group of glucose polymers made by certain bacteria. Dextrans are used therapeutically as plasma volume expanders and anticoagulants. They are also commonly used in biological experimentation and in industry for a wide variety of purposes.

### Synonyms and Source Vocabularies:

Dextrans **MeSH**

### Glucans

- Cellulose
- Dextrans
  - DEAE-Dextran
  - Iron-Dextran Complex
  - Dextran Sulfate
- Glycogen
- Isomaltose
- Maltose
- Sizofiran
- Starch
- Trehalose



Web Images Groups<sup>New!</sup> News Froogle [more »](#)

definition dextrans

Search

[Advanced Search](#)  
[Preferences](#)

## Web

Results 1 - 10 of about 1,930 for definition dextrans. (0.30 seconds)

Tip: Click to get a definition of: dextrans  
Or just click on the underlined words in the above colored bar

### DEXTRAN - Definition

... Meaning of DEXTRAN. ... **Definition:** A polysaccharide (chain of simple sugars) composed of glucose (a ... When **dextrans** are formed out of sucrose (another type of sugar ...  
[www.hyperdictionary.com/dictionary/dextran](http://www.hyperdictionary.com/dictionary/dextran) - 5k - [Cached](#) - [Similar pages](#)

### Class Definition

**Definition of Class 536. SUBCLASS 51. ... Dextrans** yield only glucose on hydrolysis but differ otherwise from starch and glycogen as in molecular structure, etc. ...  
[www.micropat.com/classdef/CLSDEF/class536/s051000.html](http://www.micropat.com/classdef/CLSDEF/class536/s051000.html) - 2k - [Cached](#) - [Similar pages](#)

### NDI Terminology - fluorescein dextrans

**fluorescein dextrans. DEFINITION:** Definition has yet to be entered. Check back later. The definitions used in this glossary of terminology ...  
[www.ndif.org/Terms/fluorescein\\_dextrans.html](http://www.ndif.org/Terms/fluorescein_dextrans.html) - 4k - [Cached](#) - [Similar pages](#)

### Dextrans - Unified Search Environment

... **Definition:** A group of glucose polymers made by certain bacteria. **Dextrans** are used therapeutically as plasma volume expanders and anticoagulants. ...  
[www.use.hcn.com.au/subject.%60Dextrans%60/home.html](http://www.use.hcn.com.au/subject.%60Dextrans%60/home.html) - 10k - [Cached](#) - [Similar pages](#)

### Definition of the stimulus to secretion of the nasal salt gland of ...

1970 Jan;2(1):35-7. **Definition** of the stimulus to secretion ... Terms Animals Beak Birds Blood Volume/drug effects Catheterization **Dextrans**/pharmacology Hypertonic ...  
[www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list\\_uids=5520749&dopt=Abstract](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=5520749&dopt=Abstract) - [Similar pages](#)

### [PDF] Using Neuronal Tracers

File Format: PDF/Adobe Acrobat - [View as HTML](#)  
... Most **dextrans** are available as "lysinated", meaning that they have a lysine molecule attached so that they can be easily fixed with aldehyde fixatives and ...  
[www.hcnr.med.harvard.edu/programs/R&R/downloads/Using\\_neuronal\\_tracers\\_protocol.pdf](http://www.hcnr.med.harvard.edu/programs/R&R/downloads/Using_neuronal_tracers_protocol.pdf) - [Similar pages](#)

### [PPT] [www.dcu.ie/~oshead/BE401/lectures/pres41866fc1b02dc.ppt](http://www.dcu.ie/~oshead/BE401/lectures/pres41866fc1b02dc.ppt)

File Format: Microsoft Powerpoint 97 - [View as HTML](#)  
... **What is a Microbial Polysaccharide?** ... Structurally **dextrans** are defined today as large class -D-glucans in which -1,6 linkages are predominant. ...  
[Similar pages](#)

### PERMEABILITY OF INTESTINAL CAPILLARIES: Pathway followed by ...

... Good **definition** and high contrast of the tracer particles were obtained in a one ...  
The glycogens and **dextrans** used move out of the plasma through the fenestrae ...  
[www.jcb.org/cgi/content/abstract/53/2/385](http://www.jcb.org/cgi/content/abstract/53/2/385) - [Similar pages](#)

### [www.websters-online-dictionary.org/definition/english/De/Dextrans.html](http://www.websters-online-dictionary.org/definition/english/De/Dextrans.html)

[Similar pages](#)

**Class Definition for Class 524 - SYNTHETIC RESINS OR NATURAL ...**

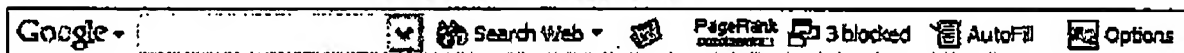
... Dextrans are a group of compounds differing according to the bacteria used to ... Included within the definition of the di- and tri- saccharides are, eg, sucrose ...

[www.uspto.gov/go/classification/uspc524/defs524.htm](http://www.uspto.gov/go/classification/uspc524/defs524.htm) - 101k - [Cached](#) - [Similar pages](#)

Google

Result Page: 1 2 3 4 5 6 7 8 9 10 [Next](#)

Free! Get the Google Toolbar. [Download Now](#) - [About Toolbar](#)



definition dextrans

[Search](#)

[Search within results](#) | [Language Tools](#) | [Search Tips](#) | [Dissatisfied?](#) [Help us improve](#)

[Google Home](#) - [Advertising Programs](#) - [Business Solutions](#) - [About Google](#)

©2005 Google



United States Patent and Trademark Office

PATENTS

[Home](#) | [Site Index](#) | [Search](#) | [FAQ](#) | [Glossary](#) | [Guides](#) | [Contacts](#) | [eBusiness](#) | [eBiz alerts](#) | [News](#) | [Help](#)

[Patents](#) > [Tools and Guidance](#) >> [Classification](#) >>> [Class Definition](#)

[Class Numbers & Titles](#) | [Class Numbers Only](#) | [USPC Index](#) | [International](#) | [HELP](#)

You are viewing a Class definition.

## **CLASS SYNTHETIC RESINS OR NATURAL RUBBERS -- PART OF THE 524. CLASS 520 SERIES**

[Click here for a printable version of this file](#)

### **SECTION I - CLASS DEFINITION**

Class 524 is a continuation of Class 523. Class 523, subclass 1 is the parent subclass of all the Class 524 subclasses.

The Class 523 Class Definition is applicable to both Class 523 and Class 524.

### **SUBCLASSES**

#### **1 Adding a NRM to a preformed solid polymer or preformed specified intermediate condensation product, composition thereof; or process of treating or composition thereof:**

This subclass is Indented under subclass 1. Subject matter under Class 523, ... wherein a nonreactant material (NRM) is admixed with a preformed solid polymer (SP) or preformed specified intermediate condensation product (SICP), or the product of such an admixing process.

(1) Note. In many instances wherein a composition is claimed the claims do not indicate the mode of production of the composition. In the absence of such information it is necessary to review the disclosure to determine the mode of preparation of the composition. If it is disclosed that the composition can be prepared by admixing a NRM with a preformed solid polymer or specified intermediate, a notation into this area is required.

(2) Note. This subclass and the indented subclasses hereunder provide for chemical or physical treatments and the products thereof of compositions containing a solid polymer or a preformed specified intermediate composition and a NRM when the claims fails to recite the mode of preparation of the composition and the specification is as noted in the (1) Note, above.

#### **SEE OR SEARCH CLASS:**

588, Hazardous or Toxic Waste Destruction or Containment, subclass 255 for polymer or resin containing compositions which contain hazardous or toxic waste to prevent its release into the environment.

#### **2 Water settable inorganic compound as nonreactive material:**

This subclass is indented under subclass 1. Subject matter wherein the added nonreactant material is an inorganic material hardenable by hydration to produce a solid mass, e.g., Portland cement, gypsum cement, etc.

(1) Note. This subclass takes an inorganic material claimed or disclosed by the term "cement" or "settling agent", e.g., aluminum oxide cement, etc.

Degradation of dextrin yields maltose and glucose.

**49 Aldehyde reaction product:**

This subclass is indented under subclass 47. Subject matter wherein the starch contains at least two aldehyde groups and is the product generally resulting from the reaction between starch or a derivative thereof and a reactant containing the functional group --OH and derivatives of such compounds.

**50 Ether group, other than solely linking of carbohydrate groups directly to each other:**

This subclass is indented under subclass 47. Subject matter wherein the starch has the general formula R-O-R", wherein -R-O is a starch moiety and R" is a carbon atom of a noncarbohydrate containing organic radical and which carbon is not directly bonded to a chalcogen atom by a double bond.

**51 Ester:**

This subclass is indented under subclass 47. Subject matter wherein the starch is a compound resulting from the reaction of a hydroxyl group of a starch and an acid.

**52 Solid polymer derived from ethylenic reactants only:**

This subclass is indented under subclass 47. Subject matter wherein the carbohydrate is mixed with a solid polymer derived from only ethylenic reactants.

**53 At least one carboxylic acid ester:**

This subclass is indented under subclass 52. Subject matter wherein the solid polymer derived from ethylenic reactants only is derived from at least one carboxylic acid ester.

(1) Note. See the Class 520 Glossary wherein the term "carboxylic acid ester" is defined under "carboxylic acid or derivative".

**54 Dextran or derivative:**

This subclass is indented under subclass 27. Subject matter wherein the carbohydrate is higher molecular weight polysaccharide containing D-glucose units linked predominately as D (1 6).

(1) Note. Dextrans yield only glucose on hydrolysis but differ from starch and glycogen as to molecular structure.

(2) Note. Dextrans are a group of compounds differing according to the bacteria used to ferment the sugar.

**55 Gum or derivative:**

This subclass is indented under subclass 27. Subject matter wherein the carbohydrate is a highly branched polysaccharide composed of two or more monosaccharides and which are exudations of plants which are produced by the plant to cover wounds and to prevent attack by organisms.

**56 Disaccharide or trisaccharide, e.g., sucrose, etc.:**

This subclass is indented under subclass 27. Subject matter wherein the carbohydrate contains only two or three monomeric units each of which contains at least five carbon atoms.

(1) Note. Included within the definition of the di- and tri- saccharides are, e.g., sucrose, lactose, maltose, cellobiose, etc.

**57 Ester:**

This subclass is indented under subclass 56. Subject matter wherein the di or trisaccharide is a compound resulting from the reaction of a hydroxyl group of a di or trisaccharide and an acid.

# Definition of Class 536

## SUBCLASS 51

To Parent definition (subclass 18.7)

To Manual for Class 536

Compounds which are high molecular weight polysaccharides containing D-glucose units linked predominately -D (16).

- (1) Note. Dextrins yield only glucose on hydrolysis but differ otherwise from starch and glycogen as in molecular structure, etc.
- (2) Note. Dextrins are usually a group of compounds differing according to the bacteria used to ferment the sugar.
- (3) Note. Controlled hydrolysis of native dextrin yields clinical dextrin of lower molecular weight which is useful as a blood plasma substitute.

## Alginates Topic Tree

### Definition:

Salts of alginic acid that are extracted from marine kelp and used to make dental impressions and as absorbent material for surgical dressings.

### Synonyms and Source Vocabularies:

Alginates **MeSH** **UMLS**

### Carbohydrates

- Amino Sugars
- Blood Glucose
- Deoxy Sugars
- Dietary Carbohydrates
- Glycoconjugates
- Glycosides
- Monosaccharides
- Polysaccharides
  - Alginates
  - Carrageenan
  - Chitin
  - Ficoll
  - Fructans
  - Galactans
  - Glucans
  - Glycosaminoglycans
  - Gum Arabic
  - Karaya Gum
  - Lentinan
  - Mannans
  - Oligosaccharides
  - Pectins
  - Pentosan Sulfuric Polyester
  - Polysaccharides, Bacterial
  - Proteoglycans
  - Pyrogens
  - Sepharose
  - Tragacanth
  - Xylans
  - Zymosan
- Sugar Acids
- Sugar Alcohols
- Sugar Phosphates


[Web](#) [Images](#) [Groups](#) [News](#) [Froogle](#) [more »](#)

definition alginates

Search

[Advanced Search](#)  
[Preferences](#)
**Web**

Results 51 - 60 of about 4,470 for definition alginates. (0.08 seconds)

**Algae Lecture**

... Algae are Thallus, meaning they lack true roots, stems, and leaves, fruits, connecting tissue etc. ... This is like the **alginates** and very valuable. ...

darter.ocps.net/classroom/klenk/Algae.htm - 33k - [Cached](#) - [Similar pages](#)

**HMBV - HMBV - Drying: Continuous drying - Micron flash dryer ...**

... Application Food additives such as CMC and **Alginates** are extremely difficult to grind and have a fibrous structure meaning that substantial amounts of energy ...

www.hmbv.nl/english/04\_022142\_food\_additives.asp - 13k - [Cached](#) - [Similar pages](#)

**[PDF] DEFINITION PREVALENCE CAUSES DES ULCERES(1) CAUSES DES ULCERES(2)...**

File Format: PDF/Adobe Acrobat - [View as HTML](#)

Page 1. 1 **DEFINITION** ... Charbon Hémorragiques Exsudatives ou — Plaies infectées — **Alginates** Et/ou ...

www.cicatrisation.info/cours/ulceres.pdf - [Similar pages](#)

**general information**

... In general, though, natural foods meet this definition: ... Agar-agar—derived from seaweed. Albumin—derived from egg whites. **Alginates**—derived from seaweed. ...

www.worldwise.com/food.html - 30k - [Cached](#) - [Similar pages](#)

**From Algae to Conifers**

... Algae (from the Latin alga, meaning seaweed) have a simple structure not ... The kelp Macrocystis is harvested to provide extracts (**alginates**) that help to give ...

ridge.icu.ac.jp/gen-ed/lower-plants.html - 20k - [Cached](#) - [Similar pages](#)

**WMEP Product 1**

... Combinant dressings: **alginates** + hydrocolloid etc. ... The Wound - Field concept encourages the novice or practitioner to examine what is a contaminant and what is ...

www.unisa.edu.au/wound/wound\_learning\_unit.htm - 25k - [Cached](#) - [Similar pages](#)

**Food Additives**

... Calcium Alginate - see **Alginates**. ... The FDA definition of flavors is as follows: Natural flavor (or natural flavoring) is the essential oil, oleonesic, essence ...

www.kosherquest.org/bookhtml/FOOD\_ADDITIVES.htm - 63k - [Cached](#) - [Similar pages](#)

**ific.org : What's This Doing In My Food? A Guide to Food ...**

... Gums are classified by source, such as seaweed (which includes agar, **alginates**, carrageenan), plant seed gums (which include guar ... **What is a GRAS ingredient?** ...

www.ific.org/foodinsight/2000/nd/foodingredf600.cfm - 43k - [Cached](#) - [Similar pages](#)

**Microsoft PowerPoint - Products for external application**

File Format: PDF/Adobe Acrobat - [View as HTML](#)

... Page 19. **Alginates** Salts of alginic acid (E400-405) ... form ribbons similar in appearance to a goat horn (from the Greek "tragos" meaning goat and ...

www.tcd.ie/Pharmaceutics/Products%20for%20external%20application.pdf - [Similar pages](#)

**Grafts of microencapsulated pancreatic islet cells for the therapy...**



BEST AVAILABLE COPY

# Systematics of Topicals

---

## 1. Liquid Systems

## 2. Semi-Solid Systems

## 3. Solid Systems

# Hydro-Gels with organic GA's

## Natural GA's

- Gelatin (name!)
- Starch (wallpaper paste)
- Alginate
- Pectin
- Tragacanth

## Semi-synthetic GA's

- Cellulose ethers (eg, MC, HEC, HPC, Na-CMC)
- Starch derivatives
- Pectin derivatives

## Fully synthetic GA's

- Polyacrylates
- Polyvinyl alcohols (PVA)
- Polyvinylpyrrolidone (PVP)

## Alginate

---

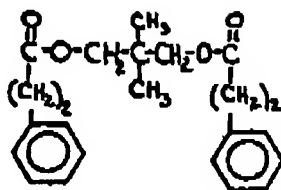
### Salts of alginic acid (E400-405)

- A mixture of polyuronic acids composed of residues of D-mannuronic acid and L-guluronic acids (Mw ~ 240,000)
- From *Phaeophyceae* (algae)
- Easy soluble in cold water, forms viscous liquids or gels at pH 6-7 (2-10%)
- Sensitive to temperature increase, pH change, salts, but stable ~40% alcohol content

October 2004

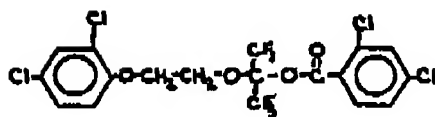
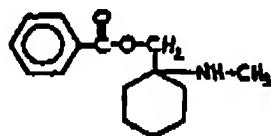
## CLASSIFICATION DEFINITIONS

560 - 29



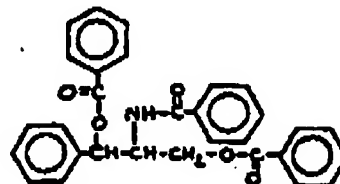
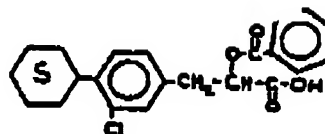
- 106 Ring in alcohol moiety:**  
This subclass is indented under subclass 103. Compounds wherein the alcohol moiety contains a carbocyclic group.

(1) Note. This subclass contains, for example:



- 107 Plural rings in alcohol moiety:**  
This subclass is indented under subclass 106. Compounds wherein the alcohol moiety contains more than one carbocyclic group.

(1) Note. This subclass contains, for example:

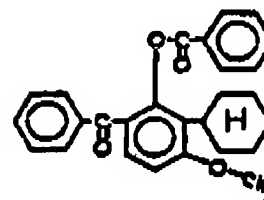
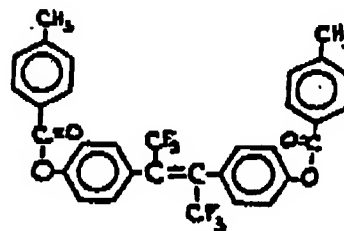


## SEE OR SEARCH CLASS:

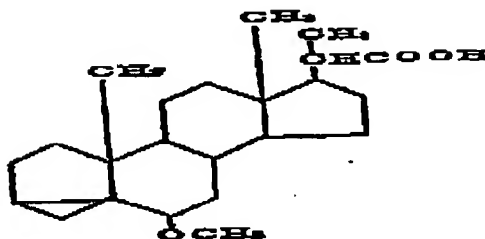
552, Organic Compounds, subclass 653 for esters of Vitamin D compounds, cholecalciferols, activated 7-dehydrocholesterols, dihydrotachysterols, 3-5 cyclovitamin D compounds, etc.

- 108 Esterified phenolic hydroxy:**  
This subclass is indented under subclass 107. Compounds wherein the ester function is formed with a phenolic OH group.

(1) Note. This subclass contains, for example:

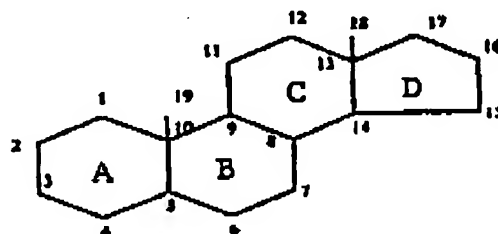


December 2002 Edition



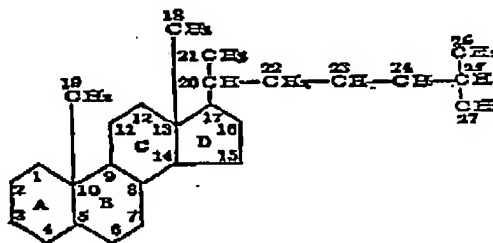
**502 Cyclopentano-hydrophenanthrene ring system containing**

This subclass is indented under subclass 1. Compounds under Class 532, which have the basic structure in Fig. 1 below:

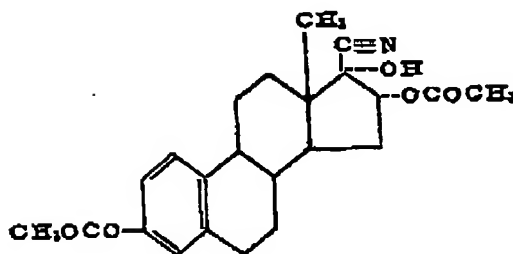


Which may contain double bonds between its ring members.

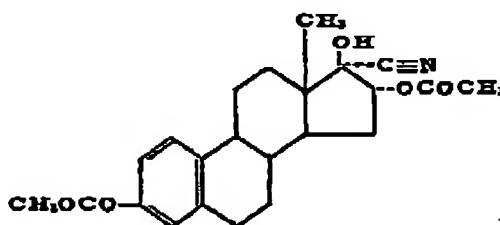
- (1) Note. The phenanthrene portion of this tetracyclic ring system cannot be completely aromatic; it must be hydrogenated to some degree.
- (2) Note. In the indents hereunder which refer to positions, the numbers shown in this definition are employed.
- (3) Note. Included herein are compounds which contain an additional ring fused to one or more of the rings of the cyclopentano-hydrophenanthrene ring system. See subclasses 510-514.
- (4) Note. The following structure shows the numbering system for substituents at the 17-position of the cyclopentano-hydrophenanthrene ring system:



- (5) Note. A substituent at the 17-position of the cyclopentano-hydrophenanthrene ring system is designated as alpha or beta depending upon the stereochemical configuration thereof. A 17 beta-substituent is normally written or drawn directly above the 17-carbon atom and attached thereto by a solid line; a 17-alpha substituent is normally written or drawn to the right of the 17-carbon atom and attached thereto by dotted lines. The drawings below illustrate a cyano substituent as both a 17-beta and 17-alpha substituent.



**17B-cyano-3, 16a-diacetoxyestr-1,3,5(10)-trien-17a-ol**



**17a-cyano-3, 16a-diacetoxyestra-1,3,5,(10)-trien-17B-ol**

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 653,** for Vitamin D compounds, calciferols, cholecalciferols, ergocalciferols, activated ergosterols, activated 7-dehydrocholesterols, irradiated ergosterol, irradiated 7-dehydrocholesterol, antirachitic vitamins, dihydrotachysterols, and 3,5-cyclovitamin D compounds.

SEE OR SEARCH CLASS:

- 514,** Drug, Bio-Affecting and Body Treating Compositions, subclasses **169+** for a medicinal composition including a cyclopentanohydrophenanthrene compound.
- 536,** Organic Compounds, subclasses **5+** for steroid glucosides, e.g., digitalis glucosides.
- 540,** Organic Compounds, subclasses **2+** for cyclopentanohydrophenanthrene compounds containing a heterocyclic nucleus.

**503 With preservative or stabilizer**

This subclass is indented under subclass 502. Products which contain a compound having a cyclopentanohydrophenanthrene ring system in admixture with a preserving or stabilizing agent whose sole function is to prevent physical or chemical change.

**504 Heavy metal or aluminum containing**

This subclass is indented under subclass 502. Compounds which include aluminum or a metal having a specific gravity greater than four.

(1) Note. Arsenic is considered a heavy metal.

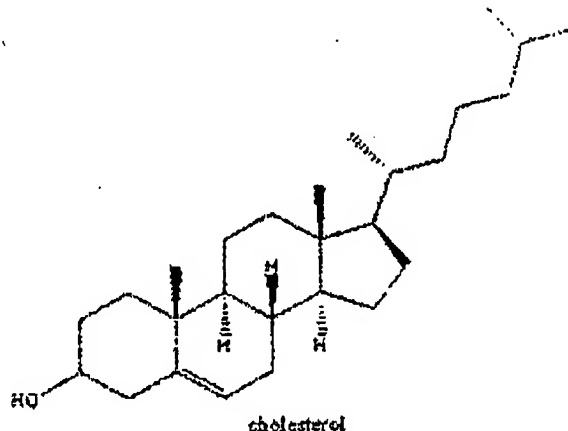


Tell me about: cholesterol


[Directory](#) > [General Reference](#) > [Wikipedia](#) > [cholesterol](#)


## cholesterol

**Cholesterol** is a steroid lipid, found in the cell membranes of all body tissues, and transported in the blood plasma, of all animals. Most cholesterol is produced internally, not dietary in origin. It is present in higher concentrations in tissues which either produce more or have more densely packed membranes; for example the liver, spinal cord, brain and atheroma. Cholesterol plays a central role in many biochemical processes, but is best known for the association of cardiovascular disease with various lipoprotein cholesterol transport patterns in the blood.



## History of the name

The name originates from the Greek *chole-* (bile) and *stereos* (solid), as researchers first identified cholesterol in solid form in gallstones.

## Physiology

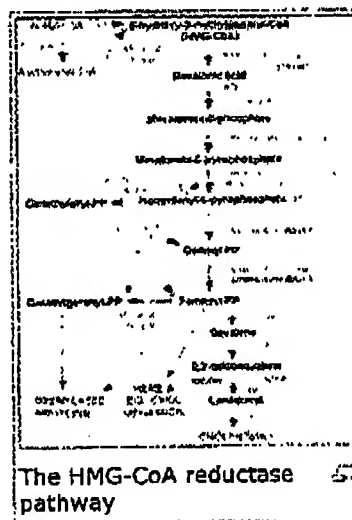
### Synthesis

Cholesterol is primarily synthesized from acetyl CoA through the HMG-CoA reductase pathway in many cells/tissues. About 20–25% of total daily production (~1 g/day) occurs in the liver, other sites of higher synthesis rates include the intestines, adrenal glands and reproductive organs.

### Properties

Cholesterol is minimally soluble in water; it cannot dissolve and travel in the water-based blood stream. Instead, it is transported in the blood stream by lipoproteins; protein "molecular-suitcases" which are water soluble and carry cholesterol and fats internally. The proteins forming the surface of the given lipoprotein particle determine from what cells cholesterol will be removed and to where it will be supplied.

The largest lipoproteins, which primarily transport fats from the intestinal mucosa to the liver are called chylomicrons. They carry mostly triglyceride fats and cholesterol (both from food and especially internal cholesterol secreted by the liver into





the bile). In the liver, chylomicron particles give up triglycerides and some cholesterol and are converted into low-density lipoprotein (LDL) particles which carry triglycerides and cholesterol on to other body cells. In healthy individuals the low-density lipoprotein (LDL) particles are large and relatively few in number. Conversely, large numbers of small low-density lipoprotein (LDL) particles are strongly associated with promoting atheromatous disease within the arteries. (Lack of information on low-density lipoprotein (LDL) particle number and size is one of the major problems of conventional lipid tests.)

High-density lipoprotein (HDL) particles transport cholesterol back to the liver for excretion, but vary considerably in their effectiveness for doing this. Having large numbers of large HDL particles correlates with better health outcomes. Conversely, having small amounts of large HDL particles is strongly associated with atheromatous disease progression within the arteries. (Note that the concentration of total HDL does not indicate the actual number of functional large HDL particles, one of the major problems of conventional lipid tests.)

The cholesterol in LDL cholesterol and the cholesterol in HDL cholesterol are identical. The only difference between the two is the carrier protein molecules (i.e. the lipoprotein).

### Regulation

The production is directly regulated by the cholesterol levels present, though the homeostatic mechanisms involved are only partly understood. A higher intake in food leads to a net decrease in endogenous production and *vice versa*. The main regulatory mechanism is the sensing of intracellular cholesterol in the endoplasmic reticulum by the protein SREBP (Sterol Regulatory Element Binding Protein 1 and 2). In the presence of cholesterol, SREBP is bound to two other proteins: SCAP (SREBP-cleavage activating protein) and Insig-1. When cholesterol levels fall, Insig-1 dissociates from the SREBP-SCAP complex, allowing the complex to migrate to the Golgi apparatus, where SREBP is cleaved by S1P and S2P (site 1/2 protease), two enzymes that are activated by SCAP when cholesterol levels are low. The cleaved SREBP then migrates to the nucleus and acts as a transcription factor to bind to the "Sterol Regulatory Element" of a number of genes to stimulate their transcription. Amongst the genes transcribed are the LDL receptor and HMG-CoA reductase. The former scavenges circulating LDL from the bloodstream, while HMG-CoA reductase leads to an increase of endogenous production of cholesterol.

A large part of this mechanism was clarified by Dr Michael S. Brown and Dr Joseph L. Goldstein in the 1970s. They received the Nobel Prize in Physiology or Medicine for their work in 1985.

The average amount of blood cholesterol varies with age, typically rising gradually until one is about 60 years old. A study by Ockrene *et al.* showed that there are seasonal variations in cholesterol levels in humans, more on average in winter.

### Function

Cholesterol is an important component of the membranes of cells, providing stability, it makes the membrane's fluidity stable over a bigger temperature interval. The hydroxyl group on cholesterol interacts with the phosphate head of the membrane and the bulky steroid and the hydrocarbon chain is embedded in the membrane. It is the major precursor for the synthesis of vitamin D, of the various steroid hormones, including cortisol, cortisone, and aldosterone in the adrenal glands, and of the sex hormones progesterone, estrogen, and testosterone. Further recent research shows that cholesterol has an important role for the brain synapses as well as in the immune system, including protecting against cancer.

### Excretion



Cholesterol is excreted from the liver in bile and reabsorbed from the intestines. Under certain circumstances, when more concentrated, as in the gallbladder, it crystallises and is the major constituent of most gallstones, although lecitin and bilirubin gallstones also occur less frequently.

### Role in atheromatous disease

See also the main article hypercholesterolemia

In conditions with elevated concentrations of LDL particles, especially small LDL particles, cholesterol promotes atheroma plaque deposits in the walls of arteries, a condition known as atherosclerosis, which is a major contributor to coronary heart disease and other forms of cardiovascular disease. (Conversely, HDL particles have been the only identified mechanism by which cholesterol can be removed from atheroma. Increased concentrations of large HDL particles, not total HDL particles, correlate with lower rates of atheroma progressions, even regression.)

There is a world-wide trend that lower total cholesterol levels tend to correlate with lower atherosclerosis event rates. However, the primary association of atherosclerosis with cholesterol has always been specifically with cholesterol transport patterns, not total cholesterol per se. For example, total cholesterol can be low, yet made up primarily of small LDL and small HDL particles and atheroma growth rates are high. Conversely, if LDL particle number is low (mostly large particles) and a large percentage of the HDL particles are large (HDL is actively reverse transporting cholesterol), then atheroma growth rates are usually low, even negative, for any given total cholesterol concentration.

Multiple human trials using the increasingly more effective combination treatment strategies which have been developed overtime, have repeated confirmed that changing lipoprotein transport patterns from unhealthy to healthier patterns significantly lower cardiovascular disease event rates, even for people with cholesterol values currently considered low for adults. Some of the better recent randomized human outcome trials include ASCOT-LLA, REVERSAL, PROVE-IT, CARDS, Heart Protection Study, HOPE, PROGRESS, COPERNICUS, and especially a newer research approach utilizing a synthetically produced and IV administered human HDL, the Apo A-I Milano Trial.

The American Heart Association provides a set of guidelines for total (fasting) blood cholesterol levels and risk for heart disease:

Level mg/dL	Level mmol/L	Interpretation
<200	<5.2	Desirable level corresponding to lower risk for heart disease
200-239	5.2-6.2	Borderline high risk
>240	>6.2	High risk

However, as today's testing methods determine LDL ("bad") and HDL ("good") cholesterol separately, this simplistic view has become somewhat outdated. The desirable LDL level is considered to be 75-130 mg/dl (1.9-3.3 mmol/L), and a ratio of total cholesterol to HDL—arguably the most useful measure—of less than 5:1 is thought to be healthy. Patient's should be aware that most testing methods for LDL do not actually measure LDL in their blood, much less particle size. For cost reasons, LDL values have long been estimated using the formula: Total-cholesterol – total-HDL – 20% of the triglyceride value = estimated LDL.

Increasing clinical evidence has strongly supported the greater predictive value of more sophisticated testing which directly measures both LDL and HDL particle concentrations and size as opposed to the more usual estimates/measures of the total cholesterol carried within LDL particles or the total HDL concentration. There are three commercial labs in the United States which offer more sophisticated analysis using different methodologies. As outlined above, the real key is cholesterol transport which is determined by both the proteins which form the lipoprotein particles and the proteins on cell surfaces with which they interact.

### Cholesteric liquid crystals

Some cholesterol derivatives, (among others simple cholesteric lipids) are known to generate liquid crystalline phase called "cholesteric". The cholesteric phase is in fact a chiral nematic phase and changes colour when its temperature changes. Therefore cholesterol derivatives are commonly used as temperature sensitive dyes, in liquid crystal thermometers, and in temperature sensitive paints.

### See also

- 7-dehydrocholesterol
- triglycerides
- vitamin D

### Sources

- Anderson RG. Joe Goldstein and Mike Brown: from cholesterol homeostasis to new paradigms in membrane biology. Trends Cell Biol 2003;13:534-9. PMID 14507481.
- Ockene IS, Chiriboga DE, Stanek EJ 3rd, Harmatz MG, Nicolosi R, Saperia G, Well AD, Freedson P, Merriam PA, Reed G, Ma Y, Matthews CE, Hebert JR. *Seasonal variation in serum cholesterol levels: treatment implications and possible mechanisms*. Arch Intern Med 2004;164:863-70. PMID 15111372.

### External links

- Aspects of fat digestion and metabolism - UN/WHO Report 1994
- American Heart Association
- The Weston A. Price Society is a group that questions the connection between cholesterol and atheroma.

Enjoying GuruNet? Click here to discover how you can access our complete library of over 1,000,000 topics for free!



This article is licensed under the GNU Free Documentation License. It uses material from the Wikipedia article "Cholesterol".

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☒ FADED TEXT OR DRAWING
- ☒ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☐ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**